Biotest
From Nature for Life

APC ErgoTouch Pro

Airborne Particle Counter

ETP-1.0 en
January 2009

Operation and Service Manual
(English)

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CERTIFIED ISO 9001:2000

Manual History

The following is a manual history of the APC ErgoTouch Pro Airborne Particle Counter:

Revision	Date
A	November 2008
ETP-1.0 en	January 2009
ETP-1.0 de	January 2009

Warranty

Revision	ETP-1.0 en / January 2009
Copyright	©Biotest AG / 2009 / All rights reserved.
Address	Biotest AG, Technology Center Microbiology, Wernher von Braun Straße 9, 69214 Eppelheim, Germany
E-mail Address	HYCON@biotest.de
Limitation of Warranty and Liability	Seller warrants the goods sold hereunder, under normal use and service as described in the operator's manual, shall be free from defects in workmanship and material for (24) months, or the length of time specified in the operator's manual, from the date of shipment to the customer. This warranty period is inclusive of any statutory warranty. This limited warranty is subject to the following exclusions: a. Parts repaired or replaced as a result of repair services are warranted to be free from defects in workmanship and material, under normal use, for 90 days from the date of shipment. b. Seller does not provide any warranty on finished goods manufactured by others or on any fuses, batteries or other consumable materials. Only the original manufacturer's warranty applies. c. Unless specifically authorized in a separate writing by Seller, Seller makes no warranty with respect to, and shall have no liability in connection with, goods which are incorporated into other products or equipment, or which are modified by any person other than Seller. The foregoing is IN LIEU OF all other warranties and is subject to the LIMITATIONS stated herein. **NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR PARTICULAR PURPOSE OR MERCHANTABILITY IS MADE**. TO THE EXTENT PERMITTED BY LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE LIMIT OF SELLER'S LIABILITY FOR ANY AND ALL LOSSES, INJURIES, OR DAMAGES CONCERNING THE GOODS (INCLUDING CLAIMS BASED ON CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) SHALL BE THE RETURN OF GOODS TO SELLER AND THE REFUND OF THE PURCHASE PRICE, OR, AT THE OPTION OF SELLER, THE REPAIR OR REPLACEMENT OF THE GOODS. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES. SELLER SHALL NOT BE RESPONSIBLE FOR INSTALLATION, DISMANTLING OR REINSTALLATION COSTS OR CHARGES. No action, regardless of form, may be brought against Seller more than 12 months after a cause of action has accrued. The goods returned under warranty to Seller's factory shall be at Buyer's risk of loss, and will be returned, if at all, at Seller's risk of loss. Buyer and all users are deemed to have accepted this LIMITATION OF WARRANTY AND LIABILITY, which contains the complete and exclusive limited warranty of Seller. This LIMITATION OF WARRANTY AND LIABILITY may not be amended, modified or its terms waived, except by writing signed by an Officer of Seller.
Service Policy	Knowing that inoperative or defective instruments are as detrimental to Biotest as they are to our customers, our service policy is designed to give prompt attention to any problems. If any malfunction is discovered, please contact your nearest sales office or representative, or call Biotest's Customer Service department at +49 (0) 6103 801 496
Trademarks	APC, ERGOTOUCH, ERGOTOUCH PRO and ERGOTRAK are trademarks of Biotest AG. Biotest and the Biotest logo are trademarks of Biotest AG. Microsoft and Excel are registered trademarks of Microsoft Corporation.

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Safety Information

This section gives instructions to promote safe and proper handling of the APC ErgoTouch Pro handheld airborne particle counters.

I M P O R T A N T
There are no user-serviceable parts inside the instrument. Refer all repair and maintenance to a qualified factory-authorized technician. All maintenance and repair information in this manual is included for use by a qualified factory-authorized technician.
Any attempt to open or service the instrument by non-authorized agencies or personnel will void the warranty.

Laser Safety

The APC ERGOTOUCH PRO Airborne Particle Counter is a handheld Class I laser- based instrument.

- During normal operation, the user will ***not*** be exposed to laser radiation.
- Precaution should be taken to avoid exposure to hazardous radiation in the form of intense, focused, visible light.
- Exposure to this light may cause blindness.

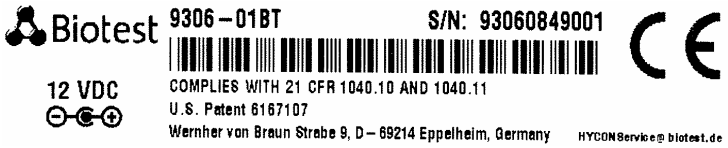
Take these precautions:

- ***DO NOT*** remove any parts from the particle counter unless you are specifically told to do so in this manual.
- ***DO NOT*** remove the housing or covers. There are no user-serviceable components inside the housing.

W A R N I N G
The use of controls, adjustments, or procedures other than those specified in this manual may result in exposure to hazardous optical radiation.

Labels

Advisory labels and identification labels are attached to the outside of the particle counter housing and to the optics housing on the inside of the instrument:

1. Serial Number Label (back panel)	
2. Laser Radiation Label (internal)	**DANGER!** VISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM WARNING: NO USER SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL
3. European symbol for non-disposable item. Item must be recycled.	

Description of Caution / Warning Symbols

Appropriate caution/warning statements are used throughout the manual and on the instrument that require you to take cautionary measures when working with the instrument:

Caution

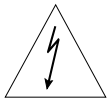
C a u t i o n
Failure to follow the procedures prescribed in this manual might result in irreparable equipment damage. Important information about the operation and maintenance of this instrument is included in this manual.

Warning

W A R N I N G
Warning means that unsafe use of the instrument could result in serious injury to you or cause damage to the instrument. Follow the procedures prescribed.

Caution and Warning Symbols

The following symbols may accompany cautions and warnings to indicate the nature and consequences of hazards:

	Warns that uninsulated voltage within the instrument may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make contact with any part inside the instrument.
	Warns that the instrument contains a laser and that important information about its safe operation and maintenance is included in the manual.
	Warns that the instrument is susceptible to electro-static dissipation (ESD) and ESD protection procedures should be followed to avoid damage.
	Indicates the connector is connected to earth ground and cabinet ground.

Getting Help

To obtain assistance with this product or to submit suggestions, please contact Biotest Customer Service, Biotest Technical Center Microbiology, or your local Biotest representative or service center:

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Chapter 1
Introduction and Unpacking

The APC ERGOTOUCH PRO Airborne Particle Counter is a lightweight, handheld particle counter with a touchscreen interface. It operates on the included lithium-ion battery or AC power.

The device has a 0.1 ft^3 / min (2.83 L / min) flow rate and counts bin sizes from 0.3 to 10 µm. Up to 10,000 data sets can be downloaded for analysis and reporting using the ERGOTRAK LITE Data Download Software included with the device.

Typical applications for this particle counter include clean room monitoring, research, exposure assessment, indoor air quality, filter testing, clearance testing, quality assurance, and contaminant migration studies. All APC ERGOTOUCH airborne particle counters meet the JIS B 9921: 1997 standard.

Unpacking the APC ErgoTouch Pro Airborne Particle Counter

Carefully unpack the APC ERGOTOUCH PRO airborne particle counter from the shipping container and verify that all the items shown in the photos below and listed in the following tables are present. Contact your local Biotest representative immediately if items are missing or broken:

APC ERGOTOUCH PRO Airborne Particle Counter Standard Included Items

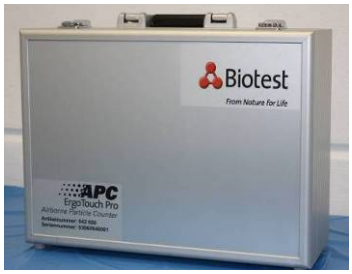
Qty.	Item Description	Part/Model	Reference Picture
1	APC ERGOTOUCH PRO Airborne Particle Counter	942 550	
1	Power Cord	US, UK, EURO (included)	
1	AC Power Adapter	942 562 (included)	
1	Isokinetic Inlet	942 602 (included)	
1	Battery Pack	942 561 (included)	

Qty.	Item Description	Part/Model	Reference Picture
1	Computer Cable (2 m), USB A to B	191 551 (included)	
1	Stylus	(included)	
1	Purge Filter Assembly (HEPA)	942 601 (included)	
1	ERGOTRAK LITE data download utility CD (includes Operation and Service Manual)	(included)	(not shown)
1	Operation and Service Manual	(included)	(installed on CD)
1	Calibration Certificate	(included)	(not shown)
1	Quick Start Guide	(included)	(installed on CD)

Optional Accessories

The following photos and table list optional accessories. If you ordered optional accessories, make certain they have been received and are in working order:

APC ERGOTOUCH PRO Airborne Particle Counter Optional Accessories

Item Description	Part/Model	Reference Picture
External Battery Charger w/ AC Adapter and Power Cord	942 563	
External Printer	942 610	
Custom Carrying Case	942 570	
Printer Paper (10 rolls)	942 611	(not shown)

Item Description	Part/Model	Reference Picture
Temperature / Relative Humidity Probe	942 565	
Isokinetic Inlet SS	942 602	
Isokinetic Probe SS (remote sampling)	942 603	
Barbed Inlet (remote sampling)	191 824	
Tubing, 30 m / 100 ft (remote sampling)	191 822	
APC Compressed Gas Adapter	942 675	
APC Compressed Gas Adapter Nozzle Set (ErgoTouch)	942 680	(not shown)

Chapter 2
Getting Started

This chapter provides information to help you use the APC ERGOTOUCH PRO Airborne Particle Counter including:

- using the instrument stand and stylus
- providing power
- performing a daily check
- installing an isokinetic inlet
- installing a Temperature / Relative Humidity Probe (Item # 942 565)

Using the Instrument Stand and Stylus

The APC ERGOTOUCH PRO is equipped with an integral instrument support stand. To open the stand, grasp it by the large finger hole and pull it out until it locks into place. Be careful not to overextend the stand. To store the stand out of the way when not in use, simply push the stand back until it snaps into place.

The APC ERGOTOUCH PRO is also equipped with a plastic stylus for use with the touchscreen interface. The stylus locks into place in the case near the top of the unit when not in use.

Providing Power

The APC ERGOTOUCH PRO may be powered using a removable rechargeable lithium-ion battery, or through an AC power cord.

Notes:

1. When using AC power, the battery (if installed) charges when the instrument is on, but not while actively sampling.
2. Removing / changing the lithium-ion battery or disconnecting the AC power does not cause loss of data.
3. A new battery is installed as part of routine service, if necessary.

To Install the Lithium-ion Battery

1. Remove the battery cover from the back of the instrument by lightly depressing the textured tab on the cover located on the lower left.
2. Slide the lithium-ion battery into the slot, press down lightly and slide it forward (toward the top of the unit) until it locks into place.
3. Replace the battery cover and slide it in place until you hear a click.

W A R N I N G
The battery supplied by Biotest has built in protection against explosion and fire hazard. Do ***not*** use a substitute.

W A R N I N G
Do ***not*** use non-rechargeable batteries in this instrument. Fire, explosions, or other hazards may result.

To Use AC Power

1. Connect the AC power adapter to the country-specific power cord.
2. Insert the AC power adapter into the bottom of the APC ERGOTOUCH PRO.
3. Connect the power cord to an outlet.
4. Press the on/off button (located in the center of the front of the instrument).
5. After a splash screen displays the Biotest logo, a brief start-up sequence begins as the Windows® CE operating system boots up.

Performing a Daily Zero Check

A zero check should be performed at least once a day. It should also be performed before conducting any important testing or certification.

To Perform a Zero Check

Turn on the instrument and wait until the main menu appears.

1. Remove the isokinetic inlet if attached. The daily zero check cannot be performed when the isokinetic inlet is attached to the instrument.
2. Attach the zero filter to the inlet nozzle located on the top of the instrument.
3. Press the **Start** button or the blue triangular key above the **On/Off** key and allow the instrument to purge for 2 minutes.
4. After the 2-minute purge, continue to sample. In accordance with JIS standards, there should be no more than 1 particle counted at any size in 5 minutes.

   ***Note**: If the instrument does not go to zero (1 particle in 5 min is considered zero), refer to Chapter 6, Troubleshooting, for additional information.*

5. Remove the zero filter and put the isokinetic inlet back on; the instrument is now ready for operation.

Installing an Isokinetic Inlet

The isokinetic inlet smoothly accelerates air into the inlet of the instrument. To install, simply thread the inlet directly onto the inlet nozzle until finger tight. The inlet seals over an o-ring so it doesn't have to be very tight to seal.

Installing a Temperature / Relative Humidity Probe

To install the optional Temperature / Relative Humidity Probe (Item # 942 565):

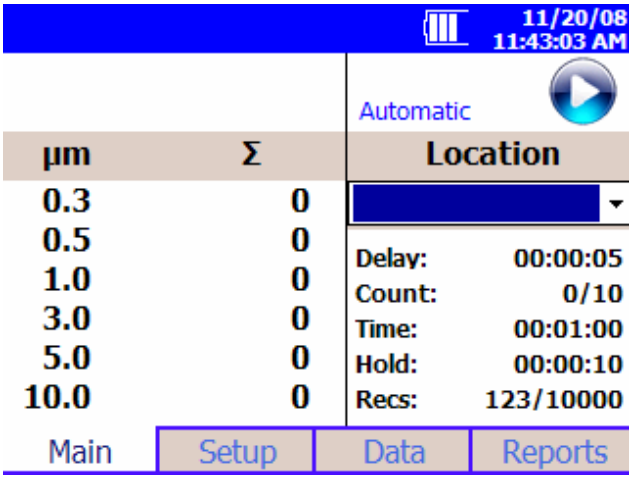
1. Align the small red dot at the base of the probe to the corresponding red dot on the socket.
2. Press the probe into the socket until it clicks.
3. Temperature and relative humidity are automatically displayed in the upper left corner.
4. Remove the probe by pulling straight up.

Chapter 3
Operation

The APC ERGOTOUCH PRO Airborne Particle Counter is controlled using a touchscreen display. Use the plastic stylus or your finger tip. **DO NOT** use sharp objects (such as a pen point) that may damage the screen overlay.

To turn on the instrument, press the **on/off** button (located in the center of the front of the instrument). After a splash screen displays the Biotest logo, a brief start-up sequence begins as the Windows® CE operating system boots up.

The instrument is ready for operation when the main tab (shown right) appears. If an optional Temperature / Relative Humidity Probe (Item # 942 565) is attached, those values will be shown in the upper-left corner also.



Screen Layout and Functionality

There are four main screens (tabs): Main, Setup, Data, and Reports. The operation of each of these screens, the information displayed on them, and the operations you can perform from each are described in the remainder of this chapter.

Some screens require or allow you to enter information. To enter information, tap on the touchscreen and an on-screen keyboard appears.

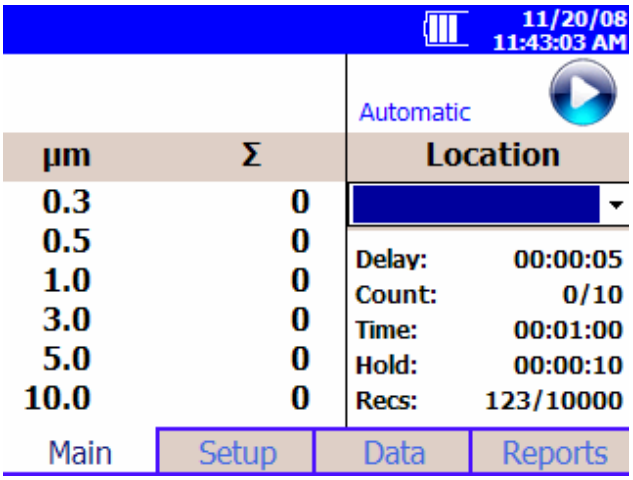
Main Tab

The **Main Tab** is the default screen. The left side of the screen summarizes the concentrations for the currently selected location. Tap on the size and count portion of the screen to enable **Zoomed Data** screen (see Setup Tab).

The display shows:

- Temperature*
- Relative humidity*
- Bin sizes
- Particle count/concentration

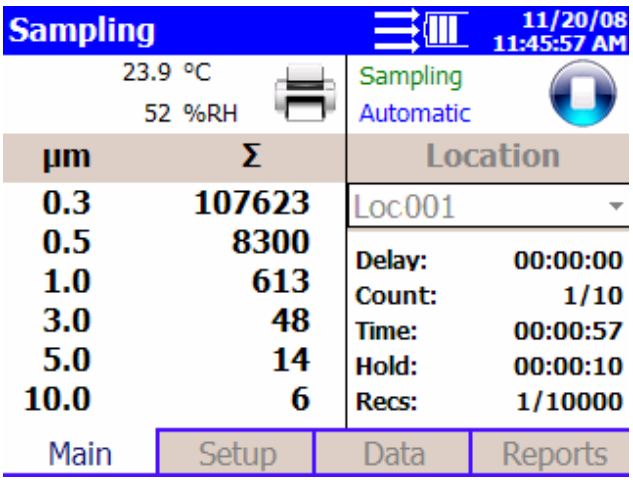
*Temperature and humidity are displayed only if the optional T/RH probe is installed.



The status bar at the top of the screen shows the current time and date settings (see the Setup Tab) and indicates:

Icon	Description
	Laser requires service
	Sufficient flow through the APC ERGOTOUCH PRO
	Insufficient flow through the APC ERGOTOUCH PRO
	Operating on AC power, no battery installed
	Operating on AC power, battery is installed and charging
	Battery charged
	Low battery
	Battery must be charged

The right side of the **Main Tab** shows locations and other information (delay, cycles, and so on). These can be configured using the Setup Tab.



Field	Description
Location	Use this dropdown box to display information about any of the available locations.
Delay	The initial delay between the time the **Start/Stop** button is pressed and the instrument begins sampling. Valid only when **Automatic** mode is selected.
Count	The number of samples that have been taken/the total number of samples. Valid only when **Automatic** mode is selected.
Time	The time for each sample. Valid only when **Automatic** mode is selected.
Hold	The time between samples. Valid only when **Automatic** mode is selected.
Recs	The total number of records in the database /10,000 (maximum number of records).
Manual/Automatic/Beep	Mode indicator refers to the “Data Count Mode” (see section below).
	Press the **Start/Stop** button to begin sampling in the configured mode. **Start/Stop** may also be entered using the triangle-shaped blue button above the power button on the front of the instrument.
	Prints the current sample to the optional printer.

Zoomed Data Screen

The **Zoomed Data** screen is entered by touching in the size and count part of the **Main Tab** display. The bottom portion of the screen summarizes the concentrations for the currently selected location. Tap the size and count portion of the display to switch back to the **Main Tab** display.

The display shows:

- Temperature *
- Relative humidity *
- Bin sizes
- Particle count/concentration

* Temperature and Humidity are displayed only if the optional T/H probe is installed.

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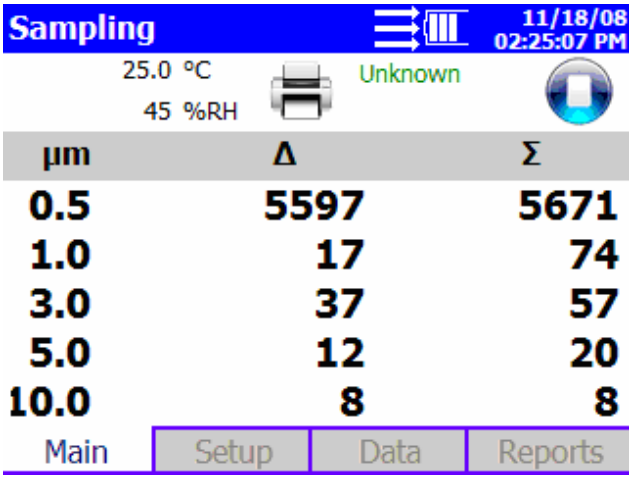
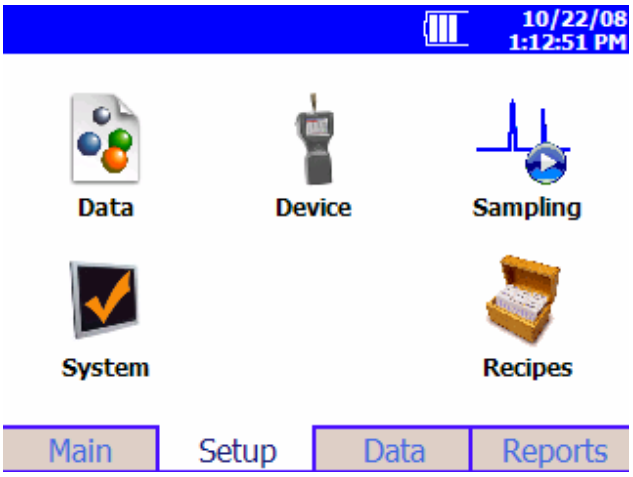


Field	Description
	Prints the current sample to the optional printer.
Location	Label that indicates the location selected when the sample was taken.
	Press the **Start/Stop** button the begin sampling in the configured mode.

Setup Tab

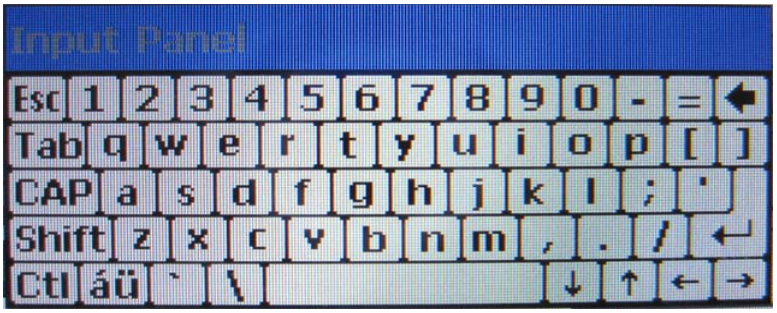
The setup tab provides access to the following:

Data Setup	View **Count Units** and **Clear Samples**.
System Setup	Change **Power On Password**, **Setup Password**, **System**, **Print Settings**, and **Print Schedule**.
Device Setup	Set **Date and Time**, **Display** and **Diagnostics**.
Sampling Setup	Set up particle **Channels**, **Sample Timing**, **Alarms**, **Count Mode**, **Locations**, and **Environment**.
Recipes	Save a group of settings (recipes) that you use over and over so you don't have to reset individual settings.



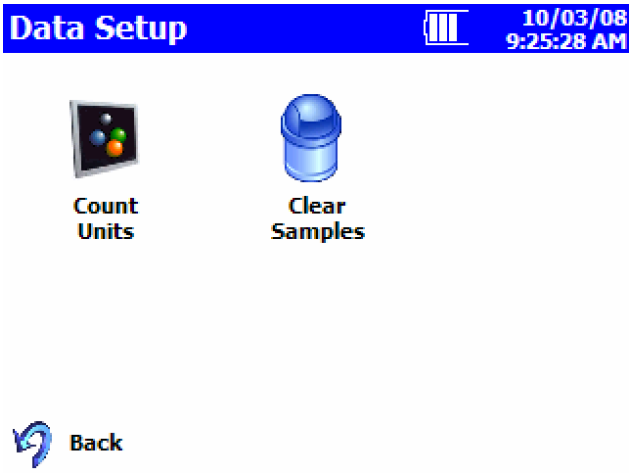
Software Input Panel (Keyboard)

Throughout the setup screens, a keyboard will appear on the screen when text may be entered. Data may be entered using this keyboard. When the entry is complete, press either the ↵ (**Enter**) or **Esc** keys. The keyboard will then be hidden until another text entry box is selected.



Data Setup Screen

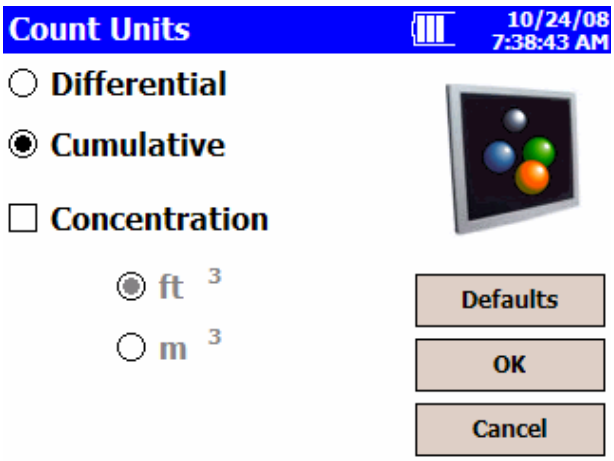
This screen lets you access the **Count Units** screen and the **Clear Samples** screen:



Count Units Screen

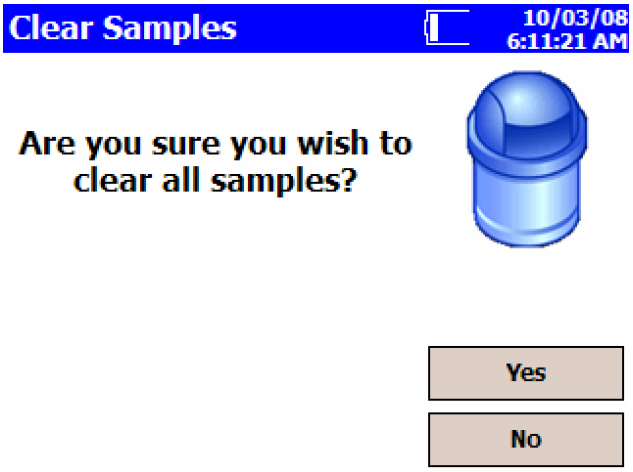
This screen lets you set the way in which particle concentration information is displayed:

Field	Description
Differential	Select to display particle count data as a differential Δ (count data indicates the number of particles within a size range from the current channel to the next larger one).
Cumulative	Select to display particle count data as cumulative Σ (the total number of counts includes all particles larger than the indicated channel size).
Concentration	Display concentration in ft^3 or m^3. If **Beep** mode is selected, display of concentration values is not allowed.



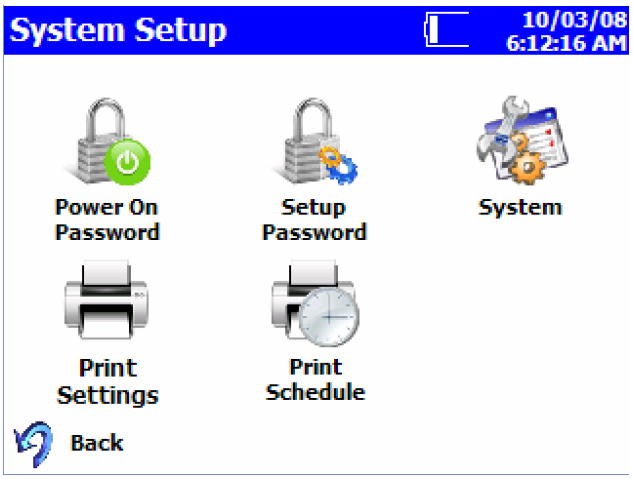
Clear Samples Screen

The **Clear Samples** screen lets you clear all samples from the internal database. Select **Yes** to clear all samples. Select **No** to return to the **Data Setup** screen:



System Setup Screen

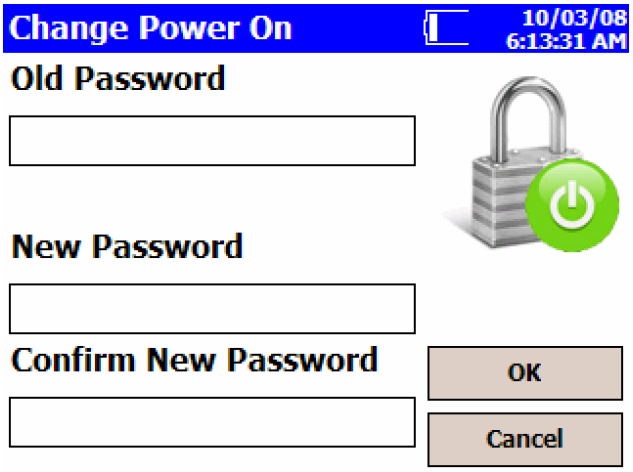
From the **System Setup** screen you can select (or change) a password for using the unit (**Power On Password**), set up a password (**Setup Passsword**), select system configuration parameters (**System**), configure the printer (**Print Settings**), and schedule print jobs (**Print Schedule**):



Change Power On Password Screen

If a **Power On Password** has been previously set, you must enter that password before being allowed to change the **Power On Password**. If a **Power On Password** is set, then on instrument startup a password screen will ask for the password before the instrument can be used. A blank password is regarded as no password and if set as the new password, will not prompt you for a password on system startup.

Tap on the screen to display the on-screen keyboard and enter the required information.



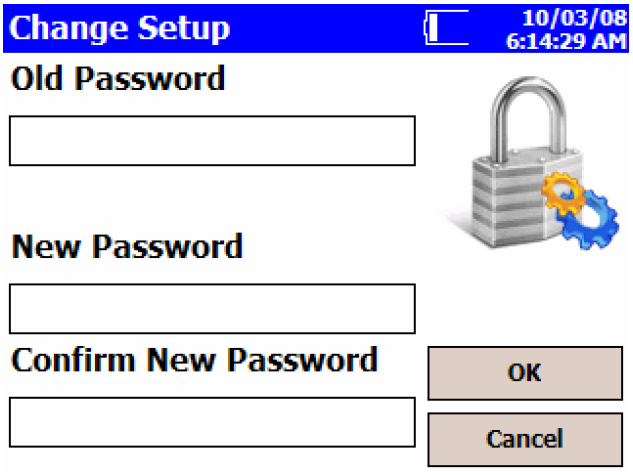
Note: *Keep the password in a safe place. It is very difficult to reset the password and requires contacting the factory.*

Field	Description
Old Password	Enter your existing password (if one has already been set).
New Password	Enter a new password. The password can be any length and use any characters.
Confirm New Password	Retype the new password then press **OK**. A confirmation message appears if the password is changed.

Change Setup Password Screen

If a **Setup Password** has been previously set, you must enter that password before being allowed to change the **Setup Password**. If a **Setup Password** is set, clicking on the **Setup** tab at the bottom of the main screen brings up a password screen. That password must be entered in order to change instrument settings.

Tap on the screen to display the on-screen keyboard end enter the required information.



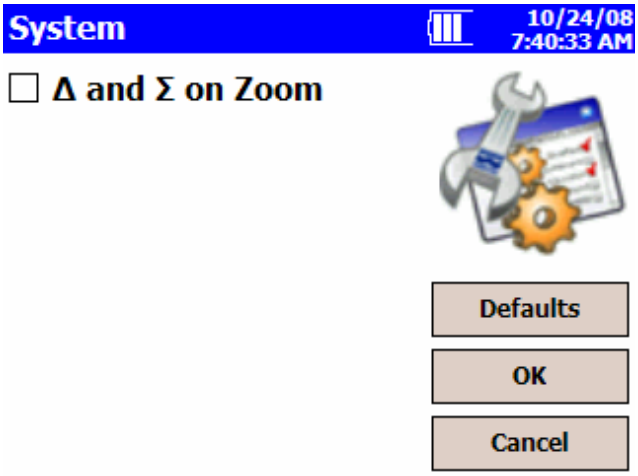
Note: *Entering a blank password will turn off password protection.*

Field	Description
Old Password	Enter your existing password. (if one has already been set).
New Password	Enter a new password The password can be any length and use any characters.
Confirm New Password	Retype the new password then press **OK**. A confirmation message appears if the password is changed.

System Configuration Screen

Use this screen to set system configuration parameters. Press **OK** when finished:

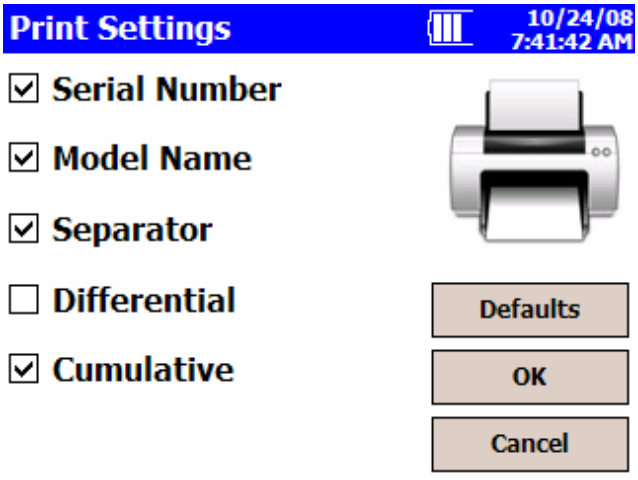
Field	Description
Δ and Σ on Zoom	Select to zoom in on both cumulative (Σ) and differential (Δ) counts on the **Main Tab**. To zoom the **Main Tab**, click on the left side of the **Main Tab**. (It takes a moment for the screen to update.) Click on the screen again to return to normal view.



Print Settings Screen

A hard copy of a sample set or statistics can be printed from the instrument using an optional thermal printer. Use this screen to set print parameters. Press **OK** when finished.

Field	Description
Serial Number	Indicates that the serial number of the particle counter used to collect the data will be printed.
Model Name	Indicates that the model number of the particle counter used to collect the data will be printed.
Separator	Indicates a line separator will be printed after the **Model Name** and **Serial Number** in the header of all printouts
Differential	Indicates that the differential value of the data will be printed.
Cumulative	Indicates that the cumulative value of the data will be printed.

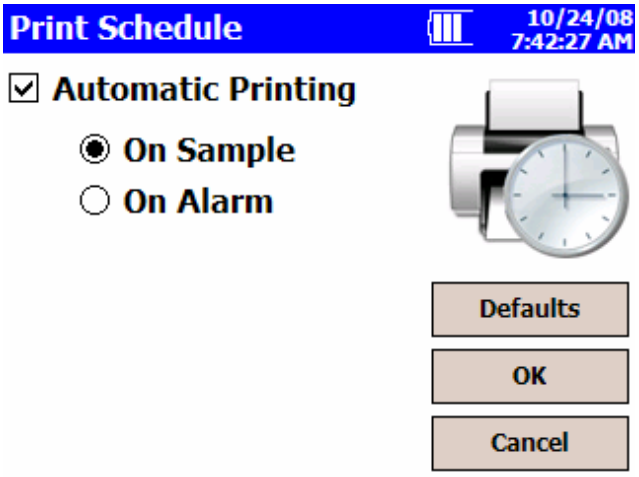


Note: *Printer paper has a colored strip printed on the last meter of each roll to indicate time to change the paper roll.*

Print Schedule Screen

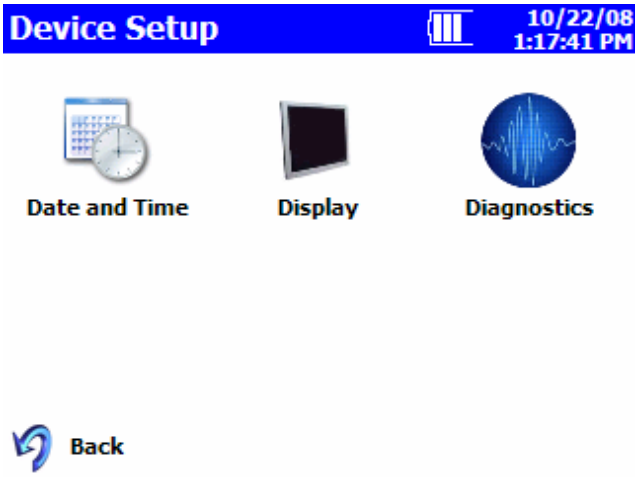
Use this screen to schedule automatic printing. You can choose to either print when an alarm occurs or print whenever a sample is complete:

Field	Description
Automatic Printing	Enables automatic printing
On Alarm	Print data when an alarm condition occurs.
On Sample	Print data whenever a sample completes.



Device Setup Screen

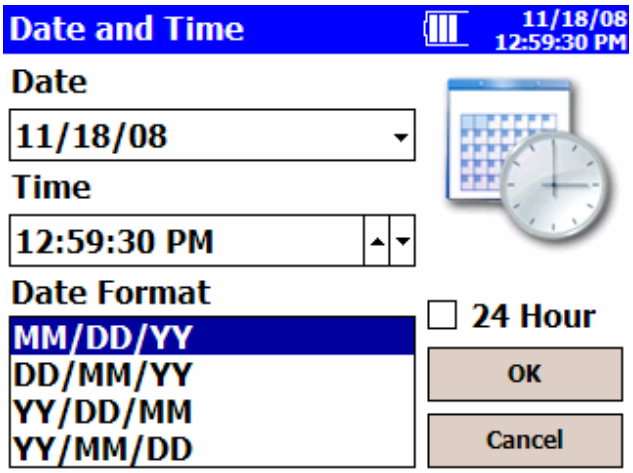
Use this screen to access screens that let you set or change the date and time, make audio visual selections, and run diagnostics:



Date and Time Screen

This screen lets you set the current date and time and set the date format. Press **OK** when finished. You can select options using the arrows or tapping on the screen.

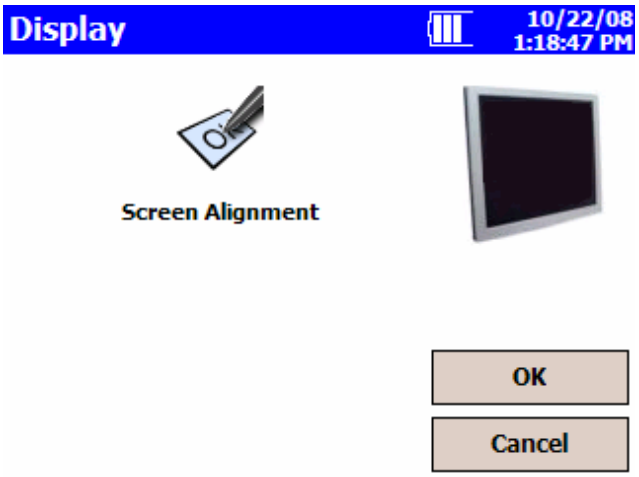
Field	Description
Date	Press the down arrow to display a calendar then select the date from the calendar.
Time	Select the time component you want to change (hours; minutes; seconds) and then use the left and right arrows to adjust to the current time.
Date Format	Highlight the date format you want to use from the list.
24 Hour	Time display is in 24 hour format.



Display Screen

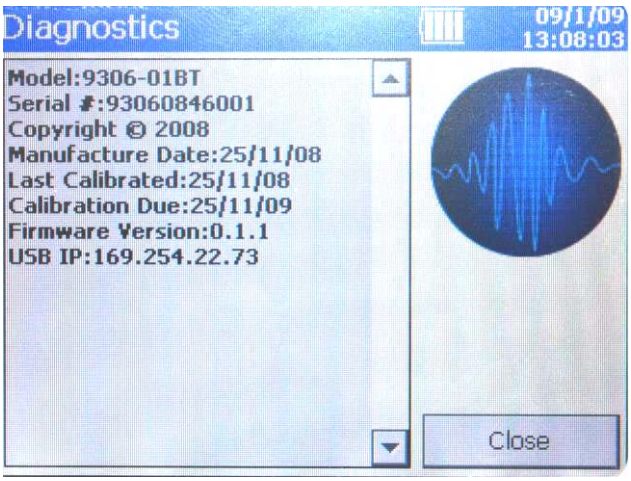
This screen lets you set or change visual parameters

Field	Description
Screen Alignment	Press this item to reset the screen alignment, and follow the directions on the alignment screen.



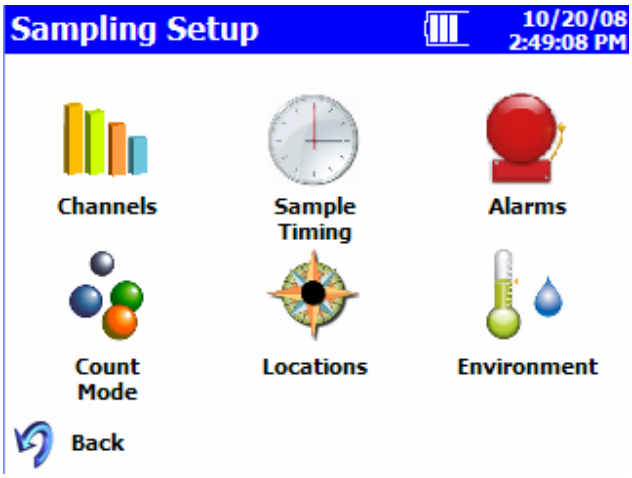
Diagnostics Screen

This screen lets you view the system's model, serial number, copyright, manufacture date, calibration date, next calibration date, firmware version, and USB IP address. Press **Close** when finished.



Sampling Setup Screen

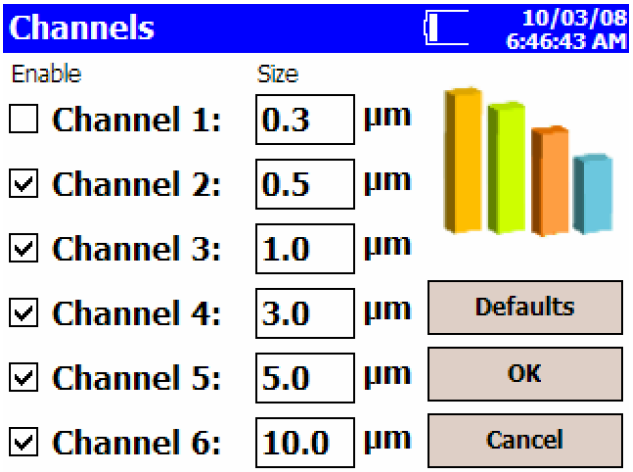
Use this screen to access screens that let you set up how sampling is displayed and handled. You can select which channels to use, the sample timing, the count mode, environment, sampling locations, and alarm thresholds.



Channels Screen

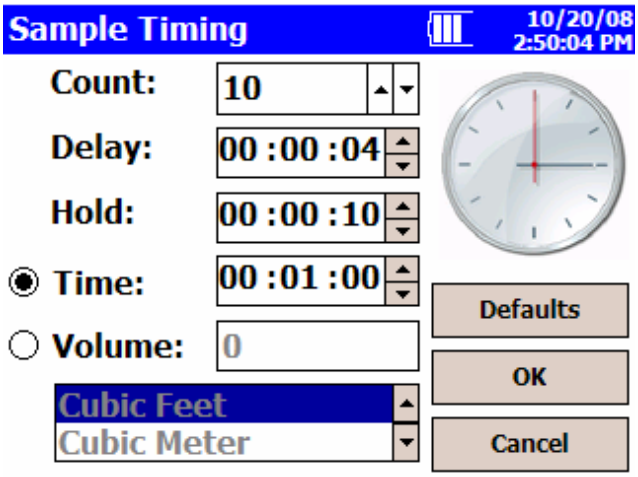
This screen lets you choose the channels that are enabled and set their particle size. Press **OK** when finished.

Field	Description
Enable	Select the channels you want to view on the main display.
Size	This box allows for changing the default size for any channel. Highlight the size information and use the on-screen keyboard to change its value. Channels cannot be set below 0.3 or above 10.0 µm and they may not overlap one another.



Sample Timing Screen

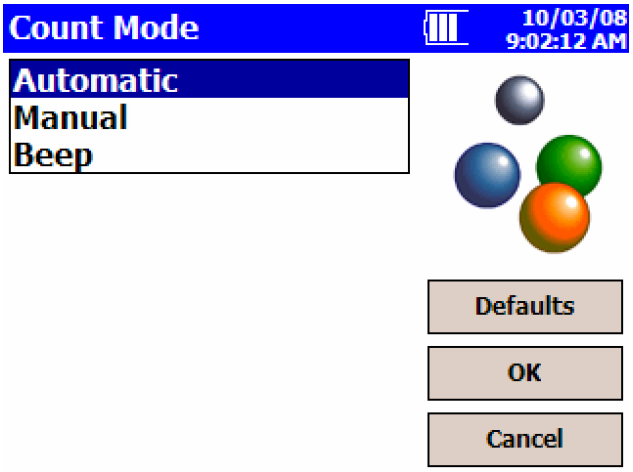
This screen lets you select parameters for sampling. Use the up and down arrows or the on-screen keyboard to change or enter information. These parameters are only valid when the APC ERGOTOUCH PRO is running in **Automatic** mode. Press **OK** when finished.



Field	Description
Count	**Count** is the total number of samples you want collected. In **Automatic** mode, a **Count** value of 0 will cause the instrument to count continuously using the settings for **Delay**, **Time**, and **Hold** until the **Start/Stop** button is pressed again. Use the up and down arrows or the on-screen keyboard to set the count.
Delay	**Delay** indicates how long it will be before the first sample is taken. It takes approximately 6 seconds for the pump to reach the flow set point; taking a measurement before the pump is functioning properly may result in a data error. Highlight the time component you want to change (hours, minutes, seconds) and use the up and down arrows or the on-screen keyboard to change the value.
Hold	**Hold** indicates how long the instrument pauses between samples. Highlight the time component you want to change (hours, minutes, seconds) and use the up and down arrows or the on-screen keyboard to change the value.
Time	**Time** indicates the duration of each sample run (count particles). Highlight the time component you want to change (hours, minutes, seconds) and use the up and down arrows or the on-screen keyboard to change the value.
Volume	**Volume** sets the volume of air that will pass through the instrument for each sample. If you select volume, you must select **Cubic Feet**, **Cubic Meters** or **Liters** for measurement using the arrows.

Count Mode Screen

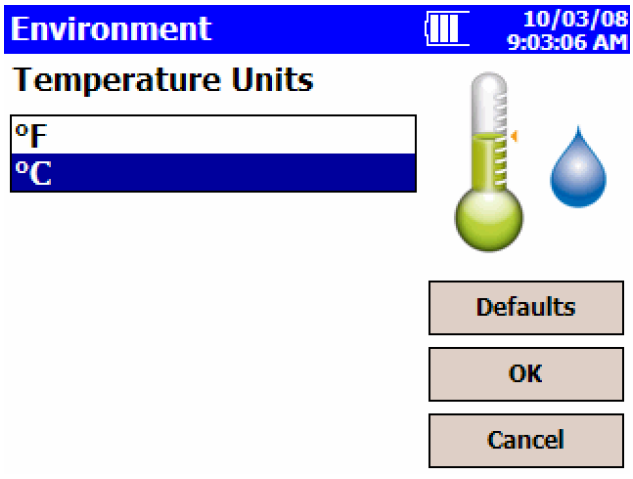
Use this screen to set the sample count mode. Press **OK** when finished.



Field	Description
Automatic	If you select this mode, the APC ERGOTOUCH PRO starts counting in **Automatic** mode when you press the **Start/Stop** button according to the setting on the **Sample Timing** screen.
Manual	If you select this mode, the APC ERGOTOUCH PRO starts sampling immediately when you press the **Start/Stop** button and stops at the end of the sample time, which is configured on the **Sample Timing** screen.
Beep	If you select this mode, the APC ERGOTOUCH PRO starts sampling data immediately and beeps whenever the threshold for the smallest bin is reached, as specified in **Alarms** screen. This can be very useful when searching for leaks, especially around filters. When this mode is selected the particle count data is displayed in total counts (not concentration).

Environment Screen

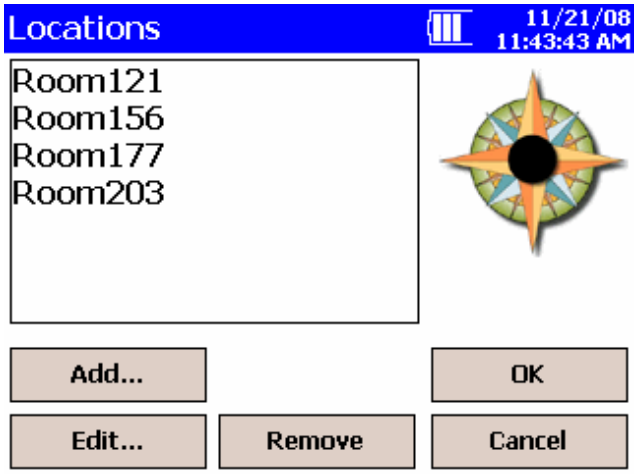
Use this screen to set the units for temperature, which is displayed on the **Main Tab**, and the printouts when a humidity and temperature probe is hooked up to the instrument.



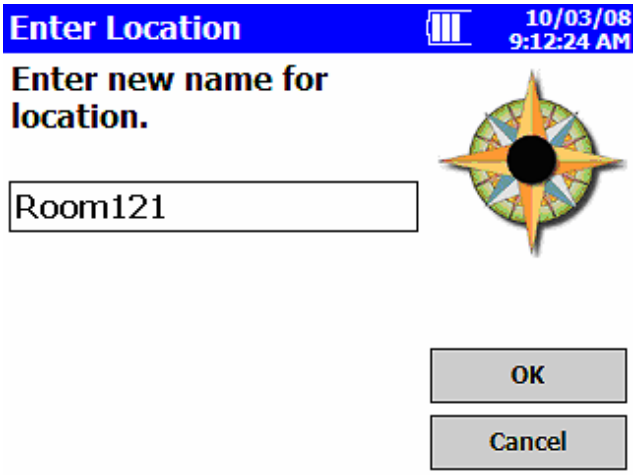
Field	Description
°F	Display temperature in degrees Fahrenheit.
°C	Display temperature in degrees Celsius.

Locations Screen

Associating collected samples with labeled locations can help keep your data organized. The APC ERGOTOUCH PRO allows you to create up to 250 labeled locations (up to 10 characters in length). Use this screen to add, remove, or modify a location names to the list of locations.



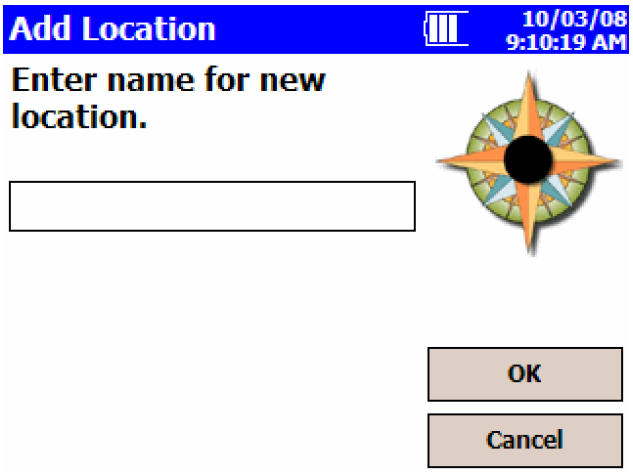
To modify a location name, highlight the name in the list, then click the **Edit**… button. In the **Enter Location** screen click the edit box in the middle and use the on-screen keyboard to modify a location name. (You cannot edit an empty location). Click **OK** when finished.



To add a location, click on the **Add**… button . In the **Add Location** screen click in the edit box in the middle and use the on-screen keyboard to add a location name. Click **OK** when finished.

To remove a location, click on location to be removed and click the **Remove** button.

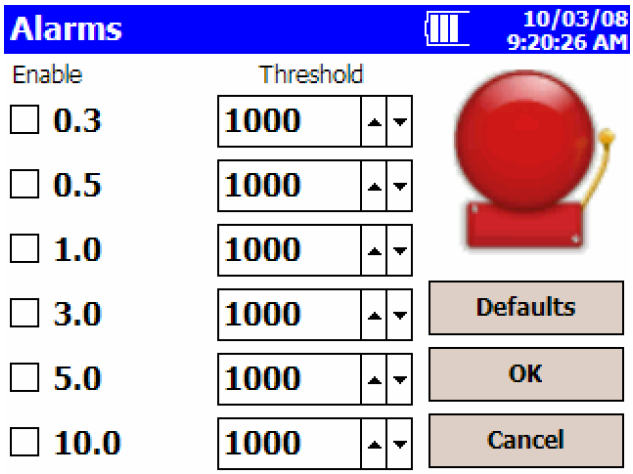
Back in the main **Locations** screen, after all editing has been completed, press **OK** when finished.



Alarms Screen

Use this screen to set the alarm threshold for each channel. Press **OK** when finished.

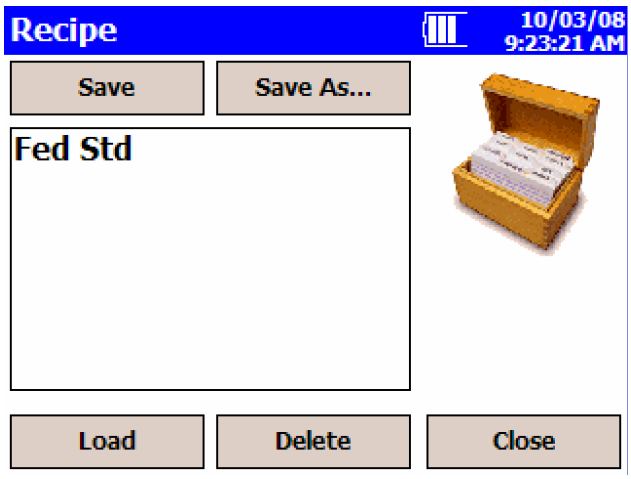
Field	Description
Enable	Select the channels on which you want to enable alarms.
Threshold	To change the threshold for any channel, click the up and down arrows for that channel or use the on-screen keyboard to change its value. The threshold value units use the currently selected display units (see **Count Units** screen).



When a channel value exceeds the threshold value you set, the channel data is highlighted in red on the **Main Tab**, an audible alarm sounds, and the alarm icon appears on the **Main Tab**. To clear the alarm, click the alarm icon In addition, the record is printed if you have selected that option on the **Print Schedule** screen.

Recipe Screen

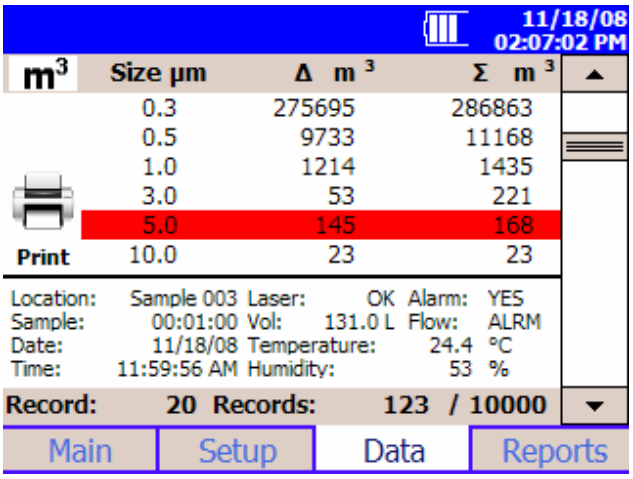
Use this screen to load and save recipes. **Recipes** let you save a group of settings (recipe) that you use over and over so you don't have to reset individual settings. There may be up to 100 recipes stored in the unit.



Field	Description
Save	When you select **Save**, a new window opens that lets you enter a name for the recipe you want to save. You can also save the current settings in an existing recipe by selecting the recipe and using **Save**. The settings / parameters that are saved include: For each channel (1-6): • Alarm setting (on/off) • Alarm threshold (value) • Channel setting (enabled/disabled) • Channel size (value) Sample Timing settings • Count mode • Count total • Start delay (in seconds) • Hold delay (in seconds) • Sample time (in seconds) Count Mode/Units Settings • Display normalized • Units (count, ft^3 or m^3) • Cumulative/Differential • Volume units Printing settings • Auto print and mode • Print cumulative/differential • Print model, separator, serial number
Save As	When you select **Save As**, a new window opens that lets you enter a name for the recipe you want to save.
Load	Highlight the recipe you want to load and press **Load**. The settings/parameters are reset to the values of that recipe.
Delete	Highlight the recipe you want to delete and press **Delete**. The recipe is deleted.

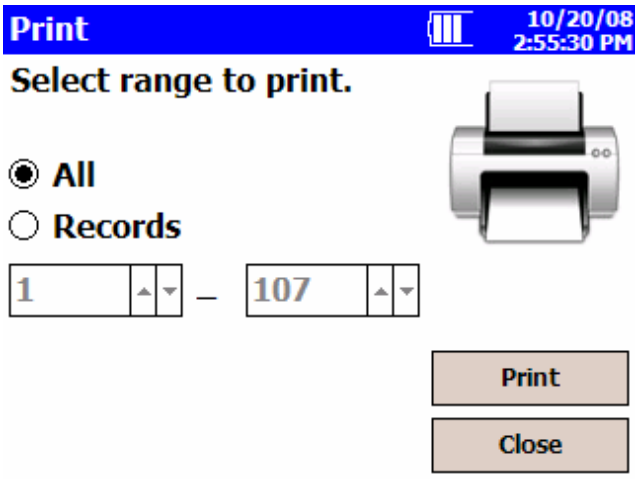
Data Tab

The **Data Tab** lets you preview data that has been collected. Use the elevator (slide) on the right to scroll through the records. The record number is displayed at the bottom of the tab. As each record displays, its data and relevant parameters are displayed.

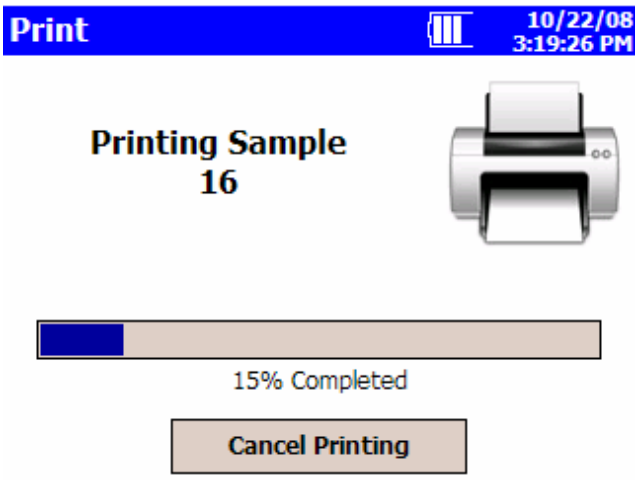


Field	Description
#, ft^3, m^3	Button used to change between counts and concentration displays.
Size µm	Channel size.
Δ	Differential concentration.
Σ	Cumulative concentration.
Location	Location where the data was collected.
Sample	Duration of the sampling period.
Date	Date on which the data was collected.
Time	Time at which data was collected.
Temperature	Temperature at the end of the time the data was collected (if probe connected during sampling).
Humidity	Relative Humidity level at the end of the time the data was collected (if probe connected during sampling).
Flow	Status of the flow.
Alarm	Alarm threshold was triggered (YES) or not (NONE).
Laser	Status of the laser.

The print button will allow a range of sample data to be printed using the optional external printer.

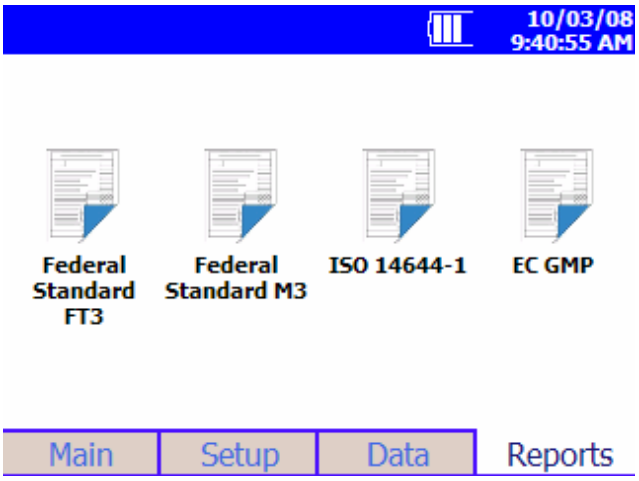


The print data screen will show progress on the current selected range of sample data to be printed. Press the **Cancel Printing** button to cancel the rest of the print job.

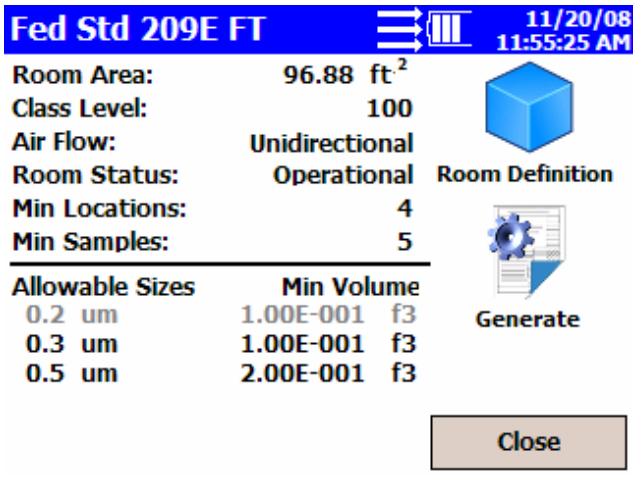


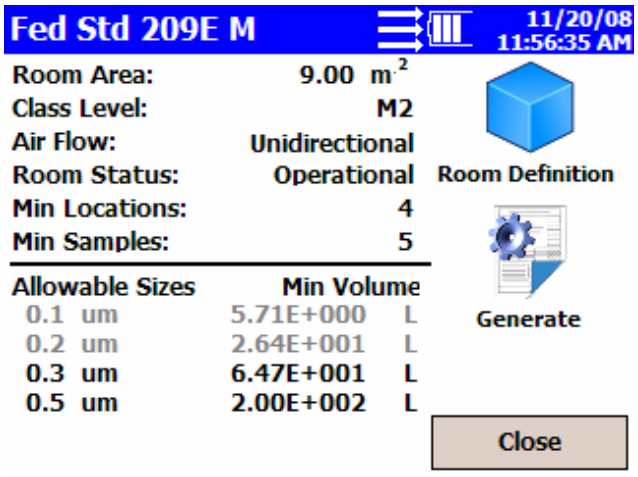
Reports Tab

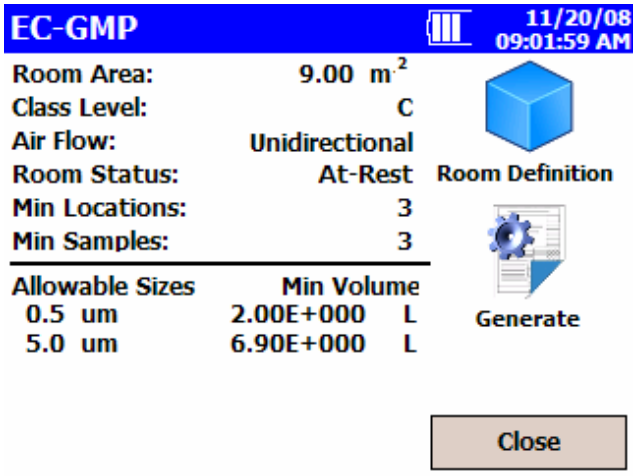
Use this screen to select various standard reports for viewing and printing

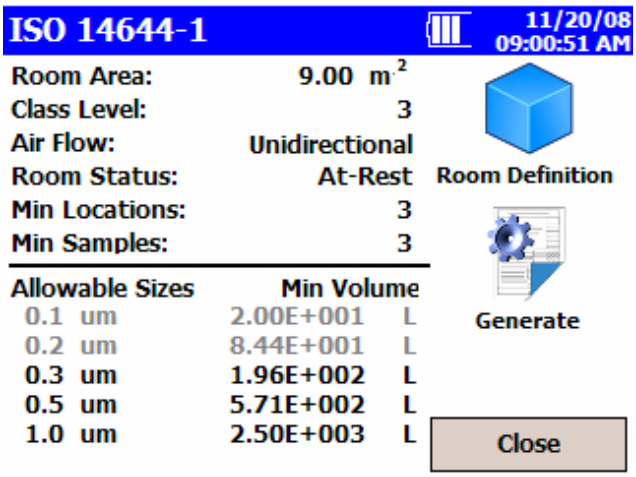


The standard reports are shown below:





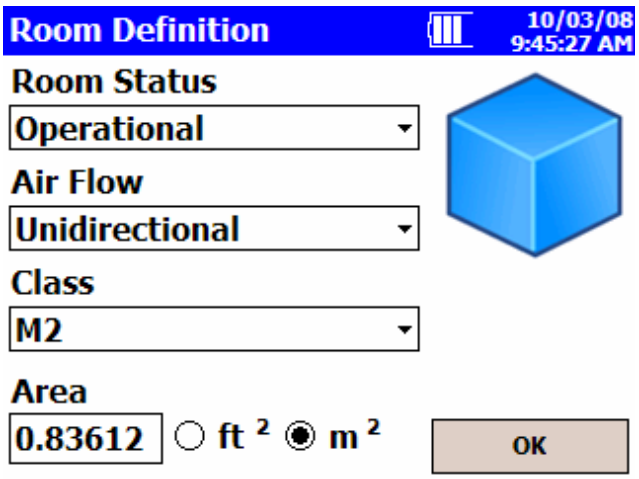




Field	Description
Room Area	Displays the area of the room in ft^2 or m^2.
Class Level	Depends on the **Room Definition**, see below.
Air Flow	Displays the airflow characteristics of the room.
Room Status	Displays the status of the room. See **Room Definition** screen below.
Min Locations	Displays the minimum number of locations that must be sampled in the room.
Min Samples	Displays the minimum number of samples that must be taken at each location.
Allowable Sizes	Allowable channel sizes for the selected Class Level for that Standard.
Minimum Volume	Displays the minimum volume (in cubic feet or meters) that must be sampled on each channel.
Room Definition	Press to set definitions for the room. See **Room Definition** screen below.
Generate	Select to print a single record or a range of records. See **Print** screenbelow.

Room Definition Screen

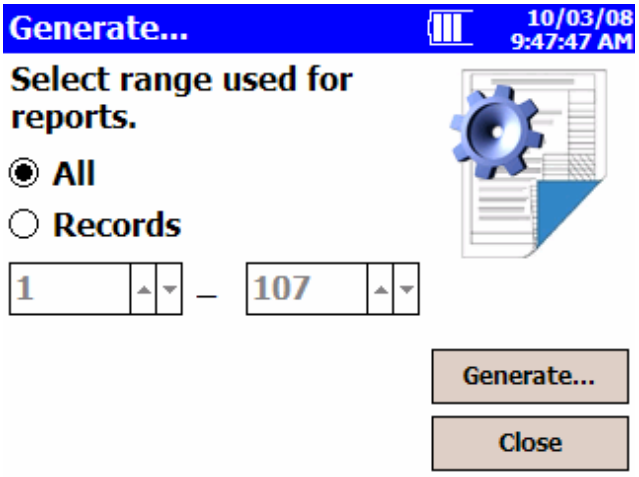
Use this screen to define specific values for the room. Press **OK** when finished:



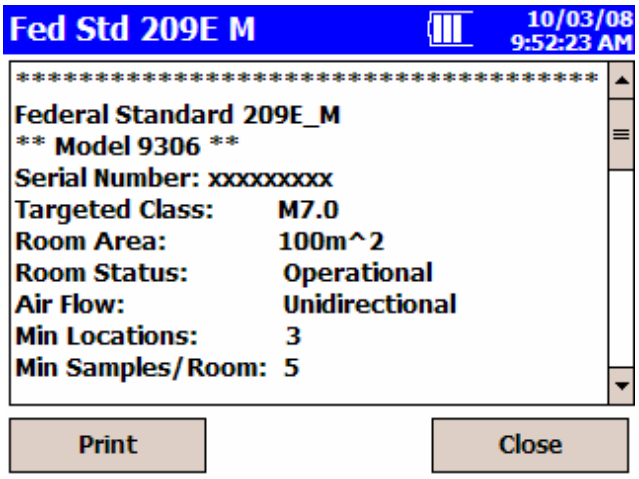
Field	Description
Room Status	Select the room status: As Built, At Rest, or Operational.
Air Flow	Select the air flow: Unidirectional or Multidirectional.
Class	Select the class of the room: The class is dependent on the standard: FED FT3: 1, 20, 100,1000,10000, 100000 FED M3: M1.0, M1.5, M2.0, M3.0, M3.5, M4.0, M4.5, M5.0, M5.5, M6.0, M6.5, M7.0 ISO14644-1: 1, 2, 3, 4, 5, 6, 7, 8, 9 EC GMP: A, B, C, D
Area	Use the on-screen keyboard to enter the area of the room in ft^2 or m^3.

Generate Screen

This screen lets you generate the report using either a single record or a range of records. Press the **Generate** button to generate the selected report.



The generated report will be displayed on the screen and may be viewed on the screen or printed (optional printer must be attached) by pressing the **Print** button.



Chapter 4
Data Handling

USB Computer Communication

The APC ERGOTOUCH PRO Airborne Particle Counter is equipped with a USB compatible cable for uploading and downloading information to a PC. The cable plugs into the right side of the instrument.

Installing Software

The ERGOTRAK LITE data transfer utility comes on a CD that loads software and communications drivers for the particle counter. The CD also contains the Operations Manual and Quick Start Guide. To install the software, insert the CD into your computer drive and follow the instructions. Installation consists of two parts:

Installation of ERGOTRAK LITE data download utility:

- Run **setup.exe** from the provided CD and follow on-screen instructions.

Installation of USB NDIS driver:

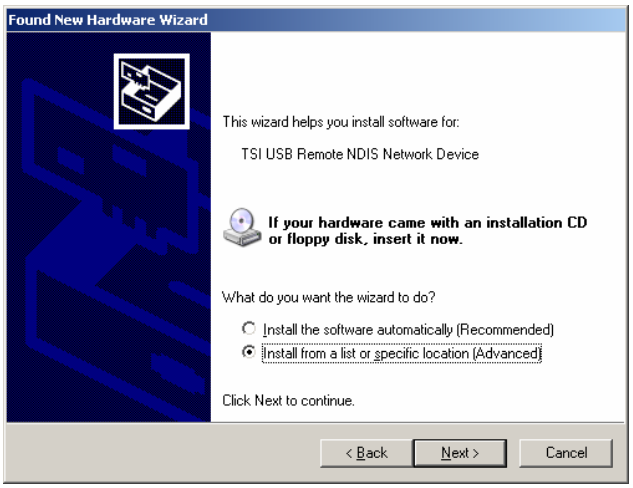
- Run **setup.exe** from the provided CD. This installation is executed transparently during the setup process and does not require user input. Once installation is finished, drivers are ready for use. When the APC ERGOTOUCH PRO particle counter is connected for the first time, system will automatically detect the device and will start driver installation process.

Procedure

1. When asked if Windows update should be used to download necessary software, select “No, not this time” and click **Next**.

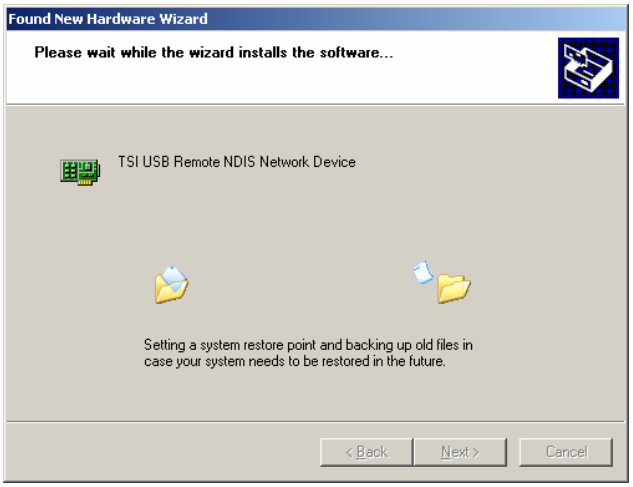
Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

2. Select “Install the software automatically (Recommended)” and click **Next**.

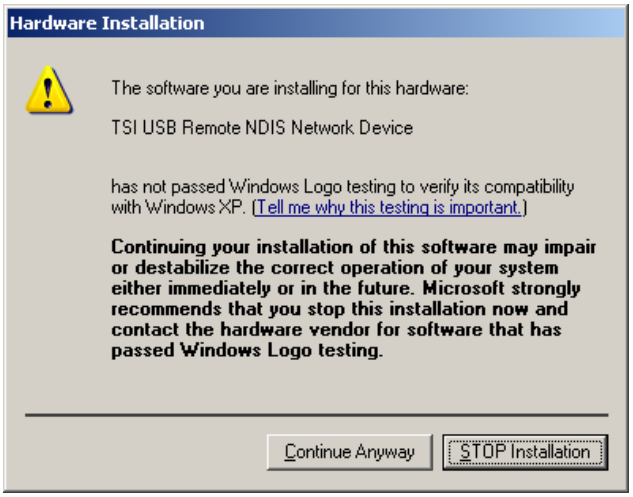

Found New Hardware Wizard
This wizard helps you install software for:
TSI USB Remote NDIS Network Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

3. Hardware Wizard will search for the driver and locate it in \System32\drivers directory.

Once that is done, the following screen will appear:


Found New Hardware Wizard
Please wait while the wizard installs the software...
TSI USB Remote NDIS Network Device
Setting a system restore point and backing up old files in case your system needs to be restored in the future.
< Back
Next >
Cancel

4. Depending on your system setup you may see a warning message:


Hardware Installation
The software you are installing for this hardware:
TSI USB Remote NDIS Network Device
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

5. Click **Continue Anyway** and the installation will proceed.

6. Once everything is completed, click **Finish**.

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
TSI USB Remote NDIS Network Device
Click Finish to close the wizard.
< Back
Finish
Cancel

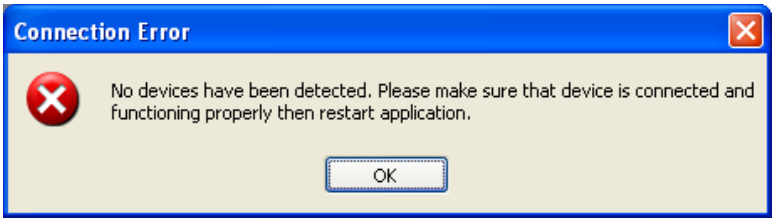
This procedure is required only on first connection, all subsequent devices will automatically locate the necessary drivers and install without requiring user input.

Download Data

To transfer data from an instrument to a computer via the USB connection for further analysis and report generation:

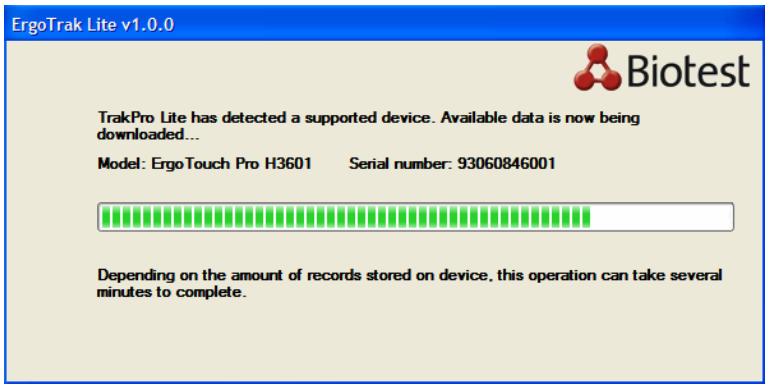
Make sure that APC ERGOTOUCH PRO particle counter is attached to the computer and turned on.

Start the application. If the APC ERGOTOUCH PRO particle counter is not connected or discovered by the application, the following message appears:

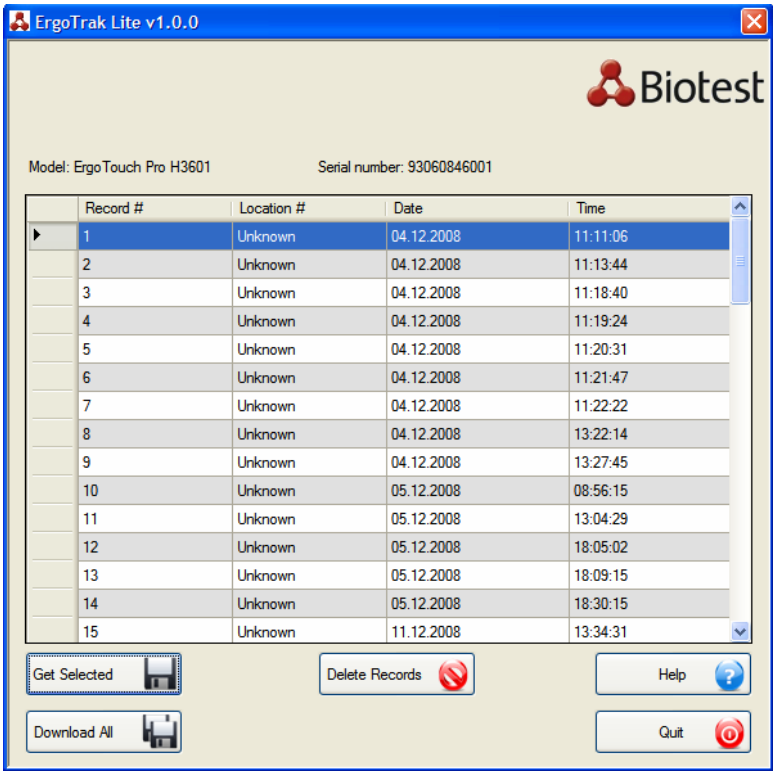

Connection Error
No devices have been detected. Please make sure that device is connected and functioning properly then restart application.
OK

- Make sure that the APC ERGOTOUCH PRO particle counter is connected, turned on, and functioning properly. Restart the application.

- If communication with ERGOTOUCH PRO particle counter has been established, the following screen appears:

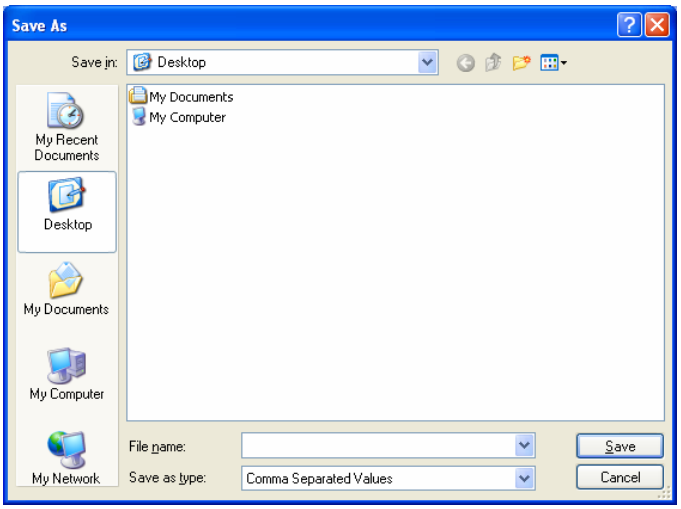

ErgoTrak Lite v1.0.0
Biotest
TrakPro Lite has detected a supported device. Available data is now being downloaded...
Model: ErgoTouch Pro H3601
Serial number: 93060846001
Depending on the amount of records stored on device, this operation can take several minutes to complete.

- Once data is successfully downloaded, the main application screen will appear:



1. There are two options for downloading data:
   - Download only user selected records:
     Hold down the **CTRL** key and use the mouse to click on the records you want to retrieve. When you have selected the records, press the **Get Selected** button to retrieve only the selected records from the device.
   - Download all records:
     Press the **Download All** button to retrieve all the records from the device.

2. After you press either the **Get Selected** or **Download All** buttons, the following dialog appears to allow you to select the folder where data will be saved:

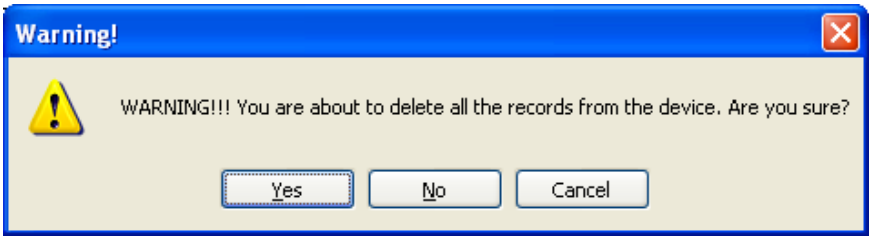


- To cancel the data transfer, select **Cancel**
- To accept the data transfer, enter the file name under which data will be saved and select **Save**.
- Data is stored in a .CSV file that can be opened by most spreadsheet programs such as Microsoft® Excel® spreadsheet software.

Delete Data

In order to delete data from the device click **Delete Records** button. The following warning will appear:

If **Yes** is selected, ERGOTRAK LITE software will erase data from the device and also from application memory.



W A R N I N G
Deleting data is an irreversible operation. Download and save data *before* deleting in order to have a copy for future use.

Chapter 5
Maintenance

N o t e
There are no user-serviceable parts inside this instrument. Opening the instrument case may void the warranty. Biotest recommends that you return the APC ERGOTOUCH PRO Airborne Particle Counter to the factory for any required maintenance or service not described in this manual.

Maintenance Schedule

Biotest recommends annual factory cleaning and calibration for the APC ERGOTOUCH PRO Airborne Particle Counter. See Chapter 7, "Contacting Customer Service" for service/calibration.

Recommended Field Maintenance Schedule

Item	**Frequency**
Daily zero check	Daily (or before each use).
Factory cleaning and calibration	Annually.
Cleaning the instrument enclosure	As needed

Daily Zero Check

The daily zero check ensures that the instrument is properly assembled and free from leaks, residual particles and electronic noise. Please see Chapter 2, “Getting Started” for detailed instructions on performing the zero check.

Cleaning the Instrument Enclosure

To clean the enclosure, dampen a lint-free cloth and gently wipe the surface until surface contamination is removed.

Chapter 6
Troubleshooting

Symptom	Possible Cause	Corrective Action
Counts are too low	• Instrument is being operated outside temperature or relative humidity specifications.	• Operate instrument within specifications
	• Internal parts have been damaged because instrument was stored at a temperature greater than 122 °F (50 °C).	• Return to factory for service
	• Instrument has contamination on the optics due to condensation or excessive loading	• Return to factory for service
	• Laser or pump control is damaged	• Return to factory for service
	• Unit is due for calibration	• Return to factory for service
Instrument does not turn on	• Battery is dead	• Recharge battery or connect to AC power
	• AC cord is not plugged into unit	• Connect AC cord
Instrument does not meet zero count specification (≤1 particle/5 mins)	• HEPA filter is not connected properly and room air is leaking into the HEPA filter assembly	• Check that the HEPA filter has been tightly connected to the inlet. Check that rubber o-ring (black) on the inlet is in place
	• Residual particles from previous samples are shedding off internal parts and into the optics	• Purge instrument by running the instrument for 10–15 minutes before attempting zero count test
	• An internal component has been damaged due to operation outside of temperature specifications or one ore more excessive bumps or jolts, and electronic noise is inducing false counts	• Return to factory for service
	• A leak has developed in the aerosol flow path	• Return to factory for service
	• Internal optics have become dirty	• Return to factory for service
Battery does not charge	• The unit must be turned on but not in sampling mode for the battery to charge	• Turn on unit.

Symptom	Possible Cause	Corrective Action
LOW BATTERY ERROR	• Low battery	• Recharge battery or connect AC cord
PHOTODETECTOR ERROR	• Direct light is entering the aerosol inlet • Laser has become misaligned due to excessive bumps or jolts • Internal optics have become dirty	• Remove instrument from direct light • Return to factory for service • Return to factory for service
SYSTEM ERROR	• Information is not being read properly by microprocessor	• Restart instrument. If problem persists, contact Biotest technical support
TEMPERATURE HUMIDITY PROBE ERROR	• Temperature/RH probe was not recognized	• Detach and reconnect probe. If problem persists, contact Biotest technical support
FLOW ERROR	• Instrument was unable to control flow rate (if any tubing is connected to particle counter) • Pressure drop across inlet may be too large • Inlet not at ambient pressure	• Restart measurement • Lessen pressure drop across inlet by using larger diameter tubing, less tubing, and/or adding a bleed valve • Do ***not*** subject the unit to other than ambient pressure conditions
LASER POWER WARNING	• Laser power has fallen outside of specification	• Return to factory for service

Chapter 7
Contacting Customer Service

This chapter gives directions for contacting people at Biotest AG for technical information and directions for returning the APC ERGOTOUCH PRO Airborne Particle Counter for service.

Technical Contacts

- If you have any difficulty setting up or operating the APC ERGOTOUCH PRO, or if you have technical or application questions about this system, contact an applications engineer at Biotest AG, +49 (0) 6221 726 5130 or e-mail hycon@biotest.de.
- If the APC ERGOTOUCH PRO, does not operate properly, or if you are returning the instrument for service, visit our website at http://www.biotest.com, or contact Biotest Customer Service at +49 (0) 6103 801 496.
- Call your local Biotest Subsidiary or Representative.

Returning the APC ERGOTOUCH PRO Airborne Particle Counter for Service

First contact your local Biotest representative to make arrangements. If you don't know or don't have a Biotest representative, you can contact Biotest directly:

Visit our website at http://www.biotest.com or call Biotest Technical Support at +49 (0) 6221 726 5130 or Biotest Customer Service at +49 (0) 6103 801 496 for specific return instructions. Customer Service will need this information when you call:

- The instrument model number
- The instrument serial number
- A purchase order number (unless under warranty)
- A billing address
- A shipping address

All instruments must be properly decontaminated prior to packing and return to Biotest. Use the original packing material to return the instrument to Biotest. If you no longer have the original packing material, seal off any ports to prevent debris from entering the instrument and ensure that the display and the connectors on the instrument front and back panels are protected.

APPENDIX A
Specifications

All specifications meet or exceed JIS B 9921: 1997. They are subject to change without notice.

Size Range	0.3–10 µm
Channel Sizes	0.3, 0.5, 1.0, 3.0, 5.0, 10.0 µm (user configurable in 0.1 µm units)
Counting Efficiency	50% @ 0.3 µm; 100% for particles > 0.45 µm (per JIS)
Concentration Limits	2,000,000 particles/ft^3 @ 5% coincidence loss
Light Source	Laser diode
Zero Count Level	≤1 count/5 minutes (<2 particles/ft^3) Meets JIS B 9921:1997
Flow Rate	0.1 CFM (2.83 L/min) with ±5% accuracy
Flow Control	Automatic
Calibration	NIST traceable
Sample Probe/Tubing	Isokinetic sampling probe
Sampling Modes	Manual, automatic, beep, concentration and cumulative/differential
Sampling Time	1 second to 99 min 59 sec
Sampling Frequency	1 to 999 cycles or continuous
Sample Output	Internal HEPA filter
Vacuum Source	Internal pump
Communication Mode	RS-232, USB
Data Storage	10,000 samples
Data Security	Password protected
External Alarm	Internal audible alarm. Indicators for counts, low battery, and sensor failure
Environmental Sensors	Optional temperature/RH probe supported
Display	QVGA 3.7-inch touch screen with Windows CE
Languages	English
Reports	ISO-14644-1, FS-209E & EC GMP
Printer	Optional external printer supported
External Surface	High impact injection molded plastic
Power	110 to 240 VAC 50 to 60 Hz Universal in-line power supply
Battery	Removable Li-Ion
Battery Life	Up to 3 hours of continuous use
Recharge Time	3 hours
Dimensions (L x W x H)	25.4 x 11.4 x 7.6 cm (10 x 4.5 x 3 in.)
Weight	1.0 kg (2.2 lbs) with battery
Warranty	2 years

Operating Conditions	5°C to 35°C; 20% to 95% non-condensing relative humidity
Storage Conditions	0°C to 50°C; Up to 98% non-condensing relative humidity
Included Accessories	Power supply, power cord, battery, isokinetic inlet, stylus, purge filter, ERGOTRAK Lite data download software, operational manual on CD, computer cable, calibration certificate, and Quick Start Guide.
Optional Accessories	Temp R/H probe, stainless steel isokinetic inlet and probe, tubing, barbed inlet fitting, printer, printer paper, carrying case and external battery charger

Temperature / RH Probe (optional accessory)

Temperature	
Range	32 to 115ºF (0 to 45ºC)
Accuracy	±2ºF (±1ºC)
Relative Humidity	
Range	10 to 90% RH
Accuracy	±5% RH